

AMENDMENTS TO THE CLAIMS

1-9. (Canceled)

10. (Previously Presented) A method of forming a stacked semiconductor device, comprising:

forming a layer of material on a portion of the top surface of a substrate, said substrate having an interconnect structure formed thereon;

selectively removing a portion of the layer of material to expose a portion of a top surface of the interconnect structure;

combining the substrate with another substrate to form a stacked semiconductor device;

causing a reaction in a portion of the layer of material wherein a portion of the area between the two substrates is filled with a polymer foam as a product of the reaction.

11. (Previously Presented) The method of claim 10, wherein the reaction comprises polymerization.

12. (Previously Presented) The method of claim 10, wherein said forming comprises spin coating.

13. (Previously Presented) The method of claim 12, wherein the layer of material is spin coated to a thickness greater than the top surface of the interconnect structure.

14. (Previously Presented) The method of claim 10, wherein the selective removing comprises one or more of: chemical etch, dry etch, or mechanical etch.

15. (Canceled)

16. (Previously Presented) The method of claim 10, wherein the layer material is selected from the group consisting of: water, hydroxyl end-capped oligomers, and carboxylic acid end-capped polymers.

17-29. (Canceled)

30-34. (Cancelled)

35. (Previously Presented) A method comprising:
forming a layer of material on a substrate including an interconnect structure formed thereon;
removing a portion of the layer of material such that a top surface of the layer of material is lower than a top surface of the interconnect structure to expose the top surface of the interconnect structure;
combining the substrate with another substrate; and
filling an area between the two substrates with a polymer foam as a product of a reaction in the layer of material.

36. (Previously Presented) The method of claim 35, wherein the reaction in the layer of material comprises polymerization.

37. (Previously Presented) The method of claim 35, wherein forming the layer of material comprises forming the layer of material to a thickness greater than the top surface of the interconnect structure.

38. (Previously Presented) The method of claim 35, wherein the layer material is selected from the group consisting of water, hydroxyl end-capped oligomers, and carboxylic acid end-capped polymers.

39. (Previously Presented) A method of forming stacked wafers, comprising:
providing a first wafer having a first conductive interconnect structure and a first layer thereon, wherein at least a portion of the first conductive interconnect is exposed;
providing a second wafer having a second conductive interconnect structure and a second layer thereon, wherein at least a portion of the second conductive interconnect structure is exposed;
bonding the first conductive interconnect structure to the second conductive interconnect structure; and

chemically reacting the first layer with the second layer by introduction of one of a reactant, heat or a gas to form a foam filling in an area between the first and second wafers adjacent to the first and second conductive interconnect structures.

40. (Previously Presented) The method of claim 39, further comprising:
thinning at least one of the first and second wafers, said foam providing structural support to the stacked wafers during said thinning.

41. (Previously Presented) The method of claim 39, further comprising:
protecting the first and second interconnect structures from oxidation using said foam during a subsequent wafer process.

42-43. (Cancelled)